

September 26, 2011

VOLUME 15 ISSUE 37

Kern, Neste Eyeing CARB Low-Carbon Fuel Standard with Renewable Diesel Fuels

Kern Oil & Refining stands out prominently in the latest California Air Resources Board (CARB) list of companies that have now completed low-carbon fuel standard (LCFS) biofuel-producer registrations.

Reason: Unlike the vast majority of CARB-registered “LCFS” biofuel producers proposing various ethanol or fatty acid methyl ester (FAME) biodiesel production schemes, Bakersfield, California-based Kern shows on its CARB registration that it would convert tallow to all-hydrocarbon renewable diesel “using lower energy for rendering” of animal fat feedstock.

According to a related “Tier 1 Multimedia Evaluation” [report](#) filed with CARB, the Kern scheme would involve co-processing 20% tallow with 80% conventional hydrocarbons at the refinery, to create a finished ultra-low sulfur diesel (ULSD) fuel that aims to meet the LCFS “carbon-intensity reduction” targets.

According to the “Tier 1” report, prepared by the University of California (UC)-Davis and UC-Berkeley, “two renewable diesel producers have provided the California ARB [CARB] with U.S. Environmental Protection Agency [EPA] Tier-I documents.



Renewable Diesel Plant / Source: Neste Oil

“These producers are Kern Oil Co., which produces a co-processed HDRD [“hydrogenation-derived renewable diesel] (‘R20’), and Neste Oil, which uses a ‘bio-only’ hydrotreating process to produce a pure HDRD (‘R100’).”

Kern’s Co-Processed ‘HDRD’ (‘R20’)

“Kern Oil and Refining (KOR) company submitted a co-processed renewable diesel (‘R20’) for detailed chemical

In This Week’s Edition of Diesel Fuel News

FEATURE

Kern, Neste Eyeing CARB Low-Carbon Fuel Standard with Renewable Diesel Fuels

Hart GTL/BTL/CTL Webinar on September 27

REGULATION & LEGISLATION

US\$100-Billion ‘Green Climate Fund’ Would Tax Aviation Fuel, Bunker Fuel

CARB Updates ‘Carbon-Intensity’ Registrations for Low-Carbon Fuel Standard

Brazil’s ANP Proposes 10-ppm Sulfur ULSD Limit for 2013

U.S. EPA Mandates ULSD, SCR, DPFs for Diesel-Powered Shell Arctic Oil Rigs

TECHNOLOGY

EPA Provides US\$1.5 Million for Diesel-Emissions Cleanups in Massachusetts

DISTILLATE MARKETS

Axens Wins ULSD License for Aramco’s Jazan Refinery Project

SOCAR Details Plans for Diesel-Oriented Refinery in Turkey

Lukoil Unveils US\$3-Billion Refinery Expansion Plan

GTL/CTL to Hit Two Million Barrels/Day by 2035 - U.S. EIA International Outlook

Neste Oil Starts Up ‘NExBTL’ Plant in Rotterdam

Marine Distillate Fuel Prices Would Soar 150% by 2030 - Study

BP Won’t Have 100% Euro-4 ULSD in S. Africa Until 2012 - Report

Despite Subsidies, India’s Diesel Prices Relatively High, Report Says

Market Report: Distillates Fall Along with Global Economy

Distillate Watch

TRANSPORT NEWS

Maersk Unveils Test of Belco Marine Diesel Exhaust-Scrubbing System

Isuzu, Qingling Ink Truck-Production Deal in China

Volvo: ‘Downspeeding’ Scheme Cuts Diesel Fuel Consumption

Wärtsilä Claims Unmatched Record in Dual-Fuel Engine Service

Alaska DOT Files for Injunction in Spat Over Diesel Ferry Engines

analysis and speciation by the Southwest Research Institute [SwRI],” according to the “Tier 1” report for CARB.

“The [finished] fuel contained less than 15 parts-per-million [ppm] sulfur. The results were compared to [U.S. federal regulations] Title 40 CFR, Subpart 86, and ASTM D975 property specifications, and the results of a U.S. EPA 1990 survey of diesel fuels.

“Three techniques were used to evaluate the fuel composition, hydrocarbon speciation, direct filter injection/gas chromatography (DFI/GC), and High Temperature Programmable Temperature Vaporization Gas Chromatography/Mass Spectroscopy (HTPTV-GCMS). Each technique characterizes a different portion of the hydrocarbons in the fuel. The SwRI analysis was performed using replicate samples from two separate fuel totes. The analysis agreed closely between totes.

“The KOR R20 diesel fuel met both the U.S. EPA certification and ASTM [diesel fuel] specifications except for the cetane number (slightly higher for both the U.S. EPA certification specifications and 1990 Survey), and Initial Boiling Point and the 10% Boiling Point for the U.S. EPA certification specification.

“In 2007, the maximum allowable sulfur concentration in diesel fuel was lowered to 15-ppm, so the comparison to 1990 sulfur concentrations is inappropriate.

“The SwRI study concluded that the KOR R20 fuel was substantially similar to other conventional diesel fuels when compared to two different fuel specifications and the results of an US EPA fuel survey.

“As part of the required 211(b) fuel analysis, Kern Oil Refining Co. submitted its renewable diesel fuel for emissions analysis by Southwest Research Institute. The KOR renewable diesel fuel was 20% co-processed tallow and conventional petroleum (R20).

“The emissions testing was conducted using a 2007 6.4-liter Navistar A350 heavy-duty diesel engine. In general, the engine met 2009 emission standards except for NOx. The 2009 emission standard for NOx is 0.01 grams/brake horsepower-hour, and the KOR renewable diesel resulted in NOx [at] 0.1 g/bhp-hr higher than the standard.

“All other emissions tested – CO [carbon monoxide], PM [particulate matter], and non-methane hydrocarbons – were significantly lower than the 2009 standard.”

Neste ‘NExBTL’ Evaluation

“As part of required 211(b) fuel analysis, Neste Oil Corporation also submitted its ‘NExBTL’ fuel for emissions analy-

sis by Southwest Research Institute,” according to the report. “The NExBTL fuel tested is a bio-only pure HDRD (R100).”

Like the Kern Oil renewable diesel blend, the NExBTL blend also was found to be “substantially similar” to conventional ULSD fuel, according to the report.

“Renewable diesel offers several beneficial characteristics that will help California meet state renewable fuel goals,” according to the report. Reasons:

- Renewable diesel is “chemically similar to the ULSD fuel already in wide use and environmental releases from the life-cycle of these fuels can be expected to behave in the environment in a manner similar to ULSD releases;”
- Renewable diesel is “compatible with existing refining and distribution infrastructure and can be used in current diesel engines without modification;”
- Pure renewable diesel (R100) has “reduced aromatic hydrocarbon content and, since many of the chemicals of environmental concern are aromatic hydrocarbons, this reduction will likely reduce the overall environmental toxicity of the fuel;”
- Limited toxicity testing on rats (oral and dermal exposures), water fleas and green algae, and including mutagenic assays, reveals that “R100 has limited inherent toxicity and that pure renewable diesel formations are unlikely to exceed the inherent toxicity or mutagenicity of standard diesel;”
- Renewable diesel fuels that are made from waste products such as tallow “will likely have reduced life cycle environmental impacts compared to fuels made from plant crops,” according to the report.

“These reduced impacts stem from possible reductions in pesticide, herbicide, and fertilizer use. Further, the use of food supply crops as a fuel is not likely sustainable as global population grows. Further studies are needed to substantiate this logic.”

What’s more, any major differences in health and ecological impact between existing diesel and renewable diesel blends “are more likely to be associated with additives than with the hydrocarbon mix,” according to the report.

“One life-cycle study sponsored by Neste Oil Corp. found pure renewable diesel (R100) from rapeseed oil or palm oil has a quantitative advantage in energy and greenhouse gas balance compared to conventional diesel.

“For renewable diesel blends, recent studies on the life-cycle impact considered a range of fuel/vehicle combinations. The results indicate that life-cycle health impacts of renewable diesel blends are not likely to differ significantly from those of petroleum diesel.”

However, “knowledge gaps” associated with renewable diesel use in California, according to the report, include:

- Additives impacts. “The most important information gaps are associated with possible differences in additive use. To provide a stable, useful, and reliable fuel, additive chemicals will need to be introduced into almost all renewable diesel blends,” according to the report.

“These additives will be required to address issues such as oxidation, corrosion, foaming, cold temperature flow properties, biodegradation, water separation, and NOx formation. While many of these additives are already used in conventional diesel fuels currently in use, the specific chemicals and amounts to be used in renewable by various producers has not been well defined for the emerging industry in California.

“A careful evaluation of the possible chemicals used in additives would be beneficial to California and may lead to a ‘recommended list’ or ‘acceptable list’ that would minimize the uncertainty of future impacts as new fuels and industry standards are developed.

“Additional research on the impacts of a ‘recommended list’ of acceptable additives needs to be considered with respect to releases to water and soils and fugitive emissions to air;”

- Production and storage releases. “Increased renewable diesel production and associated feedstock processing may involve impacts from released reactants and by-products,” according to the report.

“There are potential impacts to California’s air and water during the large-scale industrial operations use to extract seed oils. These impacts may result from air emissions of solvents used to extract the seed oil (e.g., hexane) and from leaking tanks containing process chemicals. There is also the issue of occupational exposures.

“Currently, the possible impacts during seed extraction will be minimal in California since it is anticipated that most of the seed oils will be derived from soy grown and extracted out-of-state. The impacts during seed extraction will become more of an issue for California as in-state production of plant-derived oils increases and may require further study.

“As the volume of tallow that is rendered out-of-state and shipped by rail or truck into California increases, there is a potential impact from releases of large volumes of raw triglycerides to soils or water. The impact of such a release is not well known and additional research would be beneficial as large-scale tallow usage increases;”

- Air-emissions toxicity testing. “Based on the level of variation in emissions toxicity assessment for petroleum

diesel, the chemical similarity of renewable diesel and petroleum diesel, and the likelihood for blends that still contain a significant fraction (80%) of petroleum diesel, we expect that it will be difficult, if not impossible, to organize and interpret a study to compare the toxicity of petroleum diesel relative to R20 renewable diesel blends,” according to the report.

“Therefore, unless the market evolves to the point where renewable blends contain more than 50% nonpetroleum diesel feedstock, there appears to be little value in calling for emissions toxicity studies for renewable diesel;” and

- Priority list of renewable diesel fuel formulations. “Because the number of potential feedstocks, the number of fuel blends, and the number of additive choices and mixes makes for an unmanageable suite of permutations that may require evaluation, it is critical to identify the priority feedstocks, fuel blends, and additives requiring study for any additional impacts assessment,” according to the report.

“Not specifically addressed in this Tier-I evaluation are the environmental impacts from the increased use of fertilizers and water and land resources as the production of plant oils increases in the state. These factors may be some of the most important eventual impacts to California as the renewable and biofuels industry expands. More sustainable sources of renewable diesel such as yellow or brown grease or tallow may be preferable and should be encouraged.

“During this review, we discovered that there are strong similarities between the chemical composition of petroleum diesel and renewable diesel. These similarities and the likelihood that renewable diesel will be used as a blend with petroleum diesel limits the need for additional Tier II Multimedia experiments or an extensive life-cycle impact assessment.

“As part of the overall multimedia assessment, each company proposing to market renewable diesel within California should provide the California ARB with a production, blending, additives, and distribution strategy that includes potential volumes to be stored and transported along with potential release scenarios that the company may foresee.

“Each company should also provide a comparative chemical analysis of the product they intend to market (blend or other wise). This analysis should be compared to conventional diesel currently in the market place.”

– Jack Peckham

Hart GTL/BTL/CTL Webinar on September 27

Mark your calendar: Hart Energy will present a special webinar on gas-to-liquids (GTL), biomass-to-liquids (BTL) and coal-to-liquids (CTL) at 10 a.m. CST on Tuesday, September 27, 2011.

The webinar, titled, *Emerging GTL/BTL/CTL Opportunities in North America*, will feature experts from three companies developing new GTL or BTL projects: Velocys/Oxford Catalysts, Accelergy, and Rentech.

An unprecedented price spread between natural gas and crude oil in North America is creating an arbitrage opportunity for GTL production, including diesel, kero-jet and other fuels. This phenomenon has triggered numerous announcements of

planned GTL projects in North America, as detailed in recent issues of Hart's *Gasification News* and *Diesel Fuel News*.

Similarly, BTL is emerging as a contender for biomass-based diesel and kero-jet fuels because of the scheme's exceptionally low "carbon intensity," meeting the low-carbon fuel standard targets for California and other states or nations adopting similar legislation. CTL combined with BTL, along with algae capture of byproduct CO₂, is also seen as a relatively "low-carbon" fuel contender.

Learn more about these opportunities by registering for this special webinar; registration is available [here](#).

REGULATION & LEGISLATION

US\$100-Billion 'Green Climate Fund' Would Tax Aviation Fuel, Bunker Fuel

The "G20" countries representing 85% of the world's economy and two-thirds of its population will consider a proposal from the International Monetary Fund and the World Bank to impose a new tax on aviation fuels and ship bunker fuels to support a "Green Climate Fund" to help "developing" countries cope with climate change.

According to a September 21 report from the *Associated Press* quoting from a "leaked" report to be considered by the G20 finance and development ministers, the Green Climate Fund would top US\$100 billion a year by 2020 "to help developing countries adapt to global warming and develop low-carbon economies."

The proposed scheme, which could be adopted at the G20 summit in Cannes, France, in November, "refines proposals last year by U.N. Secretary General Ban Ki-moon's advisers on how to meet the \$100-billion target," according to the report.

"The draft paper says the starting point should be a review of fossil fuel subsidies, amounting to \$40 billion to \$60 billion a year. But many of those subsidies are handed out in poor countries, where people living on the edge of subsistence need help, for example, to buy cooking gas. Still,

subsidy reforms in industrialized countries and emerging economies could contribute \$10 billion a year to a climate fund," according to the report.

"Bigger sums could be raised by charging \$25 per ton on so-called bunker fuels, the carbon-heavy oil used for aviation and shipping," according to the report.

A bunker fuel charge could raise \$40 billion a year by 2020, according to the report.

Part of that would be earmarked to compensate poor countries for higher import costs, but about \$25 billion could go toward climate change, according to the report.

The scheme "also would lead to a reduction of 5% to 10% of the greenhouse gases emitted by aircraft and the merchant marine," according to the report.

"A charge on all carbon emissions, whether through a tax or a cap-and-trade program as exists in Europe, also would lead to a 10% emissions reduction and raise at least \$230 billion," according to the report. "Most of that revenue would be used to reduce other taxes or compensate poor families, but allocating just 10% to the climate fund would meet nearly one-fourth of the goal," according to the report.

CARB Updates 'Carbon-Intensity' Registrations for Low-Carbon Fuel Standard

The California Air Resources Board (CARB) announced September 19 that its staff has updated carbon intensities (CIs) and other information regarding biofuel producers registered in the agency's low-carbon fuel standard (LCFS) program.

The updates include adding 12 new facilities (six to the "complete" list and six to the "physical pathway pending" list), adding new fuel pathways to four previously registered

facilities, moving two facilities from previous "physical-pathway-pending" list to the "complete" list, and fuel pathway revisions to two previously registered facilities.

The "carbon-intensity-pending" list remains unchanged, according to CARB.

The updated information can be found [here](#).

Brazil's ANP Proposes 10-ppm Sulfur ULSD Limit for 2013

Brazil's Agency for Petroleum, Natural Gas and Biofuels (ANP) on September 12 submitted draft specifications requiring a switch from 50 parts-per-million (ppm) sulfur to 10-ppm sulfur in ultra-low sulfur diesel (ULSD) in areas requiring ULSD by Jan. 1, 2013.

According to Hart's International Fuel Quality Center (IFQC), the draft regulation would conform to a plan by Petrobras to phase out 50-ppm sulfur ULSD in favor of 10-ppm sulfur ULSD.

The 10-ppm (Euro-5) ULSD fuel must be made available nationwide by Jan. 1, 2013, as a result of Brazil's adoption of Euro-5 equivalent emissions standards for heavy-duty vehicles and U.S. Environmental Protection Agency "Tier 2 Bin 5/4" equivalent limits for light-duty diesels, according to the IFQC.

Higher-sulfur diesel (500-ppm) will still be available in much of Brazil, to accommodate older diesel engines that don't require ULSD.

U.S. EPA Mandates ULSD, SCR, DPFs for Diesel-Powered Shell Arctic Oil Rigs

The U.S. Environmental Protection Agency (EPA) on September 19 announced that it issued final air permits to Royal Dutch Shell plc for oil and gas drilling in the Alaska Arctic – on the condition that the diesel-powered ships use ultra-low sulfur diesel (ULSD) fuel, diesel-particle filters (DPFs) and urea-selective catalytic reduction (SCR) emissions control devices.

"The permits will allow Shell to operate the Discoverer drillship and a support fleet of icebreakers, oil spill response vessels, and supply ships for up to 120 days each year in the Chukchi Sea and Beaufort Sea Outer Continental Shelf starting in 2012," according to the EPA.

"Shell's exploration drilling fleet will emit more than 250 tons of air pollutants a year and therefore, under existing law, must have federal Clean Air Act Outer Continental Shelf (OCS)/Prevention of Significant Deterioration (PSD) permits. The permits set strict limits on air pollution from these vessels.

"EPA Region 10 issued similar OCS/PSD air permits to Shell in 2010. Those permits were challenged by North Slope communities and environmental groups to the Environmental Appeals Board, which sent the permits back to EPA Region 10 in December 2010. EPA Region 10 revised the permits to address the issues raised by the Board.

"Under the new permits, Shell will reduce its fleet emissions of most key air pollutants including fine particulates and nitrogen dioxide by more than 50% from the levels allowed in their 2010 permits. These reductions are largely due to new emissions controls Shell added to meet the new nitrogen-dioxide standard that went into effect in 2011.

"The permits also require Shell to reduce air emissions by using selective catalytic reduction and oxidation catalyst controls on two icebreakers, catalytic diesel particulate filters on the Nanuq oil spill response vessel and ULSD fuel on the Discoverer drillship and all vessels in the support fleet."

TECHNOLOGY

EPA Provides US\$1.5 Million for Diesel-Emissions Cleanups in Massachusetts

The U.S. Environmental Protection Agency (EPA) on September 19 announced US\$1.5 million in grants for diesel emissions cleanups at or near the Massachusetts Port Authority (Massport).

"The EPA funding for Massport will replace 20 [diesel] trucks operating at the Conley Container Terminal in the Port of Boston which are 15-25 years old, with new trucks that comply with 2007 emission standards," according to the EPA.

"The particulate matter emissions from each new truck will be more than 20 times cleaner when compared to the highly polluting models currently in use; in terms of nitrogen

oxides [NOx], the new trucks are three times cleaner than the trucks that they are replacing."

Other EPA-funded diesel emissions cleanups in the greater Boston area include:

- Marine vessels: the EPA is providing \$391,500 to CLF Ventures (the consulting division of Conservation Law Foundation) for repowering of four "tier 0" (pre-regulated) engines in two marine vessels: *The Atlantic Queen II*, an 80-foot marine fishing/excursion vessel out of Rye, N.H.; and *The Captain's Lady II*, a 90-foot charter fishing and excursion vessel operating out of Newburyport, Mass.

“The project demonstrates a cost-effective approach to removing NOx emissions while also achieving an estimated 14% reduction in fuel consumption,” according to the EPA;

- Heavy-duty wheel-loaders: the Massachusetts Department of Environmental Protection will receive a \$373,750 grant for the installing diesel-particulate filters on heavy-duty wheeled loaders owned and operated by the Massachusetts Department of Transportation (MassDOT); and
- Transport refrigeration units (TRUs): the EPA is providing \$280,000 to the Chelsea Collaborative’s Green

Space and Recreation Committee to repower TRUs on 11 produce delivery trucks operating in Everett and Chelsea, Mass.

“The diesel operated TRUs will be replaced with all electric TRUs powered by main engine-driven onboard electric generation/battery storage systems,” according to the EPA. “The TRUs will also be able to plug-in directly to docking stations at the owner’s (Don Shapiro Produce) shipping dock in Everett.

DISTILLATE MARKETS

Axens Wins ULSD License for Aramco’s Jazan Refinery Project

Axens announced September 23 that it won contracts from Saudi Aramco for several of its technologies for the Jazan refinery and terminal project in Saudi Arabia, including one of the world’s largest gasoil hydrotreaters for Euro-5 (10 parts-per-million sulfur) ultra-low sulfur diesel (ULSD).

“The refinery, scheduled to be commissioned in December 2016, will have a capacity of 400,000 barrels per stream day,” according to Axens.

The units under Axens design are:

- Naphtha hydrotreating for feedstock purification;
- “Aromizing – CCR Reforming” for aromatics production;
- A C5/C6 isomerization unit to provide a high-octane component for the gasoline pool; and

- A “ParamaX” complex enabling to produce high-purity paraxylene and benzene.

“These units are designed and integrated to maximize the gasoline production and the aromatics throughput for petrochemical use,” according to Axens.

Axens also won the contract for the gasoil-desulfurization hydrotreater. “This ‘Prime-D’ unit – one of the world’s largest – will produce ultra-low sulfur diesel (ULSD) with less than 10 ppm [parts-per-million] of sulfur,” according to Axens.

The refinery will produce gasoline and diesel fuels that meet Euro-5 (10-ppm sulfur) specifications, according to the company.

SOCAR Details Plans for Diesel-Oriented Refinery in Turkey

The State Oil Company of Azerbaijan (SOCAR) on September 19 revealed proposed specifications for construction of a US\$5-billion, 10 million ton-per-year (214,000 barrel-per-day) oil refinery in Izmir, Turkey, to serve the requirements of Petkim Holding.

According to a report by *ABC News* (Azerbaijan), “SOCAR President Rovnag Abdullayev stated that the ceremony of the refinery [cornerstone] laying is planned for late October and the first assemblies in the refinery will start operating in three years.”

Abdullayev was quoted in the report as saying: “The construction of this plant will enable solution of two issues. First of all, the petrochemical complex – Petkim – will be provided with crude materials. Secondly, we can enter large

Mediterranean market[s] with our diesel fuel and aviation kerosene, as well as crude material for chemical industry.”

The refinery, slated for completion in 2015, won’t produce gasoline, but rather, diesel fuel, according to the report.

“Turkey has a great need for diesel fuel. In particular, diesel fuel import in Turkey in 2010 amounted to 12 million tons. We are going to take part of that market,” Abdullayev said.

Austria-OMV, which recently became the owner of Turkey’s largest retail fuel station network, Petrol Ofisi, “has already expressed interest for purchase of oil products from the refinery,” according to the report.

The new refinery “will enable SOCAR to enter with its petroleum products in the markets of Romania, Turkey and the Mediterranean countries,” according to the report.

Lukoil Unveils US\$3-Billion Refinery Expansion Plan

Lukoil will invest US\$3 billion to expand capacity at its Nizhegorodnefteorgsintez refinery over the next decade, according to a September 22 report from *Prime-Tass* (Russia).

The investment would be carried out between 2012 and 2022, according to the report.

“The refinery is to focus on producing high-quality light oil products under Euro-3 [350 parts-per-million sulfur] standards, particularly gasoline and diesel fuel,” according to the report.

GTL/CTL to Hit Two Million Barrels/Day by 2035 - U.S. EIA International Outlook

The U.S. Energy Information Administration (EIA) predicts in its new *International Energy Outlook 2011* [report](#) that gas-to-liquids (GTL) and coal-to-liquids (CTL) would collectively account for about two million barrels per day (b/d) of global liquid fuels supply by 2035.

Of that total, GTL would account for 300,000 b/d while CTL would account for 1.7 million b/d, according to the *Outlook*.

However, the report doesn't specifically mention Sasol's newly proposed 95,000-b/d GTL plant in Louisiana or another possible Sasol GTL plant in Canada in a partnership with Talisman.

“Despite the current negative outlook for many previously announced GTL projects around the world, the return and persistence of historically high oil prices in the [EIA] ‘Reference’ case supports the operation of Qatar's [Shell] Pearl facility (0.1 million barrels per day capacity) and expansion of [Sasol's] Oryx facility (adding another 0.1 million barrels per day,” according to the EIA.

“In the 2011 reference case, Qatar's GTL production increases from a negligible amount in 2008 to 0.2 million barrels per day in 2035. Although the resources to support production at those levels abound in the two countries, large investments will be required to bring them to market, and the timing of such investment is uncertain.

“In the reference case and the two low-oil price cases, GTL production is limited primarily to Qatar, although South Africa and Nigeria also produce small volumes.

“In the two high oil price cases, the United States rapidly becomes the world's third-largest GTL producer, accounting for 96,000 barrels per day of the world's total of 400,000 barrels per day in 2035.

“The Pearl GTL facility, when it reaches full production in 2012, will be the world's largest GTL plant. At full

capacity it will consume 660 billion cubic feet of natural gas per year and produce 140,000 barrels of liquids per day, including diesel, naphtha, and kerosene.

“South Africa's shale gas resource may be of particular interest, because it could be used as a feedstock in existing gas-to-liquids (GTL) and coal-to-liquids (CTL) plants,” according to the EIA.

CTL: China Story

China is the “primary CTL producer in all the IEO 2011 cases, with 2035 production levels ranging from 0.2 million barrels per day (or 50% of the world total) in the two low oil price cases to 2.1 million barrels per day (51% of the world total) in the two high oil price cases,” according to the EIA.

“Other major producers are the United States and South Africa, which produce about 0.5 million and 0.3 million barrels per day, respectively, in the reference case; 1.6 million and 0.3 million barrels per day in the ‘High Oil Price’ and ‘Traditional High Oil Price’ cases; and about 0.1 million barrels per day each in the ‘Low Oil Price’ and ‘Traditional Low Oil Price’ cases.

“Although advances in coal liquefaction technology have made CTL fuels commercially available in other countries, including South Africa, China, and Germany, the technical and financial risks of building what would be essentially a first-of-a-kind facility in the United States have discouraged significant investment thus far.

“In addition, the possibility of new legislation aimed at reducing U.S. greenhouse-gas emissions creates further uncertainty for future investment in CTL.” – **Jack Peckham**

Neste Oil Starts Up 'NExBTL' Plant in Rotterdam

Neste Oil announced September 20 that it has now started-up Europe's largest renewable diesel plant at Rotterdam, Netherlands.

"Production of 'NExBTL' renewable diesel at the new plant will be ramped up on a phased basis," according to Neste. "The plant was completed on-schedule and on-budget."

Neste Oil President and CEO Matti Lievonon added that the new plant "will help us meet demand in the European market, the world's largest for renewable diesel."

The Rotterdam plant has a capacity of 800,000 tonnes per year (t/y) and will increase Neste Oil's total renewable diesel capacity to 2 million t/y.

"Utilizing Neste Oil's proprietary NExBTL technology, the plant can make flexible use of almost any vegetable oil or waste fat in the production of premium-quality renewable diesel," according to the company.

Neste Oil already operates a renewable diesel plant in Singapore that came on stream in 2010 and two plants in Porvoo in Finland that came on stream in 2007 and 2009. All of Neste Oil's NExBTL plants produce renewable diesel and have the capability to produce NExBTL renewable aviation fuel.

With the Rotterdam plant start-up, "Neste's €1.5-billion [US\$2.1-billion] investment program aimed at increasing our renewable diesel production capacity has entered its final stage," Lievonon said.

NExBTL "helps reduce greenhouse-gas emissions by 40% to 80% compared to fossil diesel. Its lower tailpipe emissions also make a valuable contribution to enhancing overall air quality, especially in urban areas," according to the company.

Marine Distillate Fuel Prices Would Soar 150% by 2030 - Study

If most ship owners fail to install onboard emissions-scrubbing systems and thus are forced to switch from heavy, high-sulfur heavy fuel oil (HFO) to marine gasoil (MGO) or marine diesel oil (MDO), then they'll pay about US\$1,300 ton for MDO/MGO – more than double today's price for HFO, according to a new study.

The [study](#), conducted by PriceWaterhouseCoopers for the Norwegian Shipowners Association (NSA), synthesizes and re-analyzes a variety of earlier studies on the likely cost impact of a world-wide switch from HFO to MGO/MDO because of upcoming International Maritime Organization (IMO) Marpol Annex-6 ship emissions and fuels legislation.

The study shows that the cost of switching to marine distillate would "dwarf" the cost of other Marpol Annex-6 provisions requiring reductions in ship greenhouse-gas (GHG) emissions.

"Compared to the forthcoming regulations which mandate lower sulfur content of fuel, carbon pricing is estimated to have a relatively small impact on the cost to the [global marine shipping] industry," as "80% of the expected increase in voyage costs for vessels will stem from the sulfur regulations," according to the study.

The report found that a carbon tax ("levy") would be the most efficient scheme for encouraging investment in higher-efficiency shipping, with resulting lower carbon-dioxide (CO₂) emissions.

"A levy can be imposed on fuel during sales based on the carbon content of fuel, or at a port based upon emissions of a completed voyage. The levy increases the cost to a ship voyage. If it is cheaper to reduce emissions than to pay the levy, then the ship-owner or charterer will prefer to do so," according to the study.

The report "recommends that the proceeds are collected by an international body and used to purchase carbon credits to achieve an emissions reductions target. The levy would need to be set at a level sufficient to fund the purchase of sufficient carbon credits to meet the target (and to include other contributions or costs of administration). If the funds are mobilized for other purposes than to purchase carbon credits the environmental outcome cannot be determined with certainty.

"A levy, or an ETS [carbon emissions trading scheme] without any auction, would achieve the environmental outcome at the lowest cost to the industry," according to the study.

Given the forecast of drastic price increases for bunker fuel – caused by a switch to marine distillates rather than heavy fuel oil – "the price increase from the shift of fuel mix will create incentives for considerable fuel efficiency in the [ocean] fleet," according to the report. "This will result in a much more significant impact to the industry than the current proposals on carbon regulation."

The report calculates that today, about 80% of marine fuel is heavy bunker fuel and about 20% marine distillate fuel.

That would flip-flop in 2020 when the 0.5% sulfur marine bunker-fuel limit would take effect world wide, and by 2030, 96% of global marine fuel would be distillate, according to the study.

As a result, the cost of marine bunker fuel would skyrocket by 150% by 2030, according to the study.

Such drastic cost increases would result in a portion of ocean freight shifting to railroads and highways, especially for relatively short hauls, according to the study.

BP Won't Have 100% Euro-4 ULSD in S. Africa Until 2012 - Report

Diesel vehicle owners in South Africa can't count upon BP plc to have Euro-4 (50 parts-per-million sulfur) ultra-low sulfur diesel (ULSD) available at 100% of retail stations until 2012.

According to a September 19 report by the *Daily News* (South Africa), new vehicle owners that require ULSD can't take advantage of a new BP fuel discount offer for loyal customers.

"I drive a turbodiesel vehicle that requires the superior ultra-low-sulfur diesel, failing which my warranty is invalid, but not all BP service stations stock it," the report quoted

"As freight rates increase, locally produced goods would become more competitive. The demand for international transport would decline as a consequence. These impacts are likely to be a result of the low-sulfur regulations rather than carbon costs," according to the study. – **Jack Peckham**

one vehicle driver as saying. "I've been told it will take until mid-2012 for BP to have D50 [Euro-4] diesel available in all their stations countrywide."

Euro-4 ULSD has been available in South Africa since 2006, but not at every station. However, Shell and Sasol retail stations all offer Euro-4 ULSD, the report noted.

Despite Subsidies, India's Diesel Prices Relatively High, Report Says

If diesel and gasoline retail prices in India were to be calculated on a "purchasing power-parity" (PPP) basis – comparing the average Indian consumer income against average incomes in other nations – then the PPP-adjusted fuel prices would be among the highest in the world.

So found a *Times of India* study, analyzing the PPP-adjusted price of fuels among 157 nations in the world.

According to the study, "Indian prices are amongst the highest in the world at current exchange rates. And, if you even out the differences in purchasing power of different currencies, then Indian petrol and diesel prices become the highest barring some tiny, remote countries.

"Even a simple comparison of retail prices in different countries by converting them to Indian rupee reveals that petrol in India is more expensive than 98 other countries.

"Petrol is cheapest in Venezuela at just Rs 1.14 [US\$0.02] per liter. In Iran it sells for Rs 4.8 [US\$0.10] per liter.

"The second group comprises of countries like the U.S., Iraq, Indonesia, etc, where minimal tax is levied on petroleum products. They also have lower prices than India..

"India tops the group of countries which have moderate to high tax regimes. Others in the group are the EU countries and others like Singapore, New Zealand, Thailand and Brazil.

"At Rs 69.90 [US\$1.46] – the average price of petrol in 24 Indian cities – Indian prices are now comparable to price of petrol in EU.

"However, price comparisons done like this – by converting into one currency using the exchange rate – are deceptive. Petrol prices equivalent to Rs 96.39 [US\$2.02] per liter in the UK might not pinch the English in the same way as Rs 69.90 [US\$1.46] will clobber Indians.

"So, how does one compare prices across countries? This is done by the widely used Purchasing Power Parity (PPP) method. Differences in purchasing powers are evened out and relatively real price comparisons emerge.

"Using PPP prices, petrol is by far much more costly in India than most countries. PPP price of petrol in India is US\$3.95, lower than just three small countries – Timor-Leste, Malawi and Eritrea.

"Petrol costs less than a dollar in the OPEC and USA [if using the PPP index] while in most of Europe, Russia, Japan, China and the Americas, it is priced between US\$1 to US\$2 by PPP calculations.

"Despite huge subsidies, diesel is more expensive in India than 136 other countries. Costing \$2.46 at PPP, India is 23rd most-expensive in diesel prices."

Market Report: Distillates Fall Along with Global Economy

Ultra-low sulfur diesel (ULSD) prices in major spot and futures markets fell last week as economic gloom descended over global financial markets.

New York spot ULSD fell to US\$2.84/gallon (/gal), down \$0.16 from the prior week, while NYMEX October ULSD also fell to \$2.84, down \$0.21/gal.

Rotterdam spot ULSD likewise plummeted to \$2.98, while ICE gasoil futures in London fell to \$2.87. ICE also began posting its first trades for ULSD futures, for the January 2012 delivery month. The latest trade was at US\$916.25/ton, or \$16/ton above October ICE gasoil futures.

The falling value of the Euro was causing heating-oil buyers to postpone gasoil purchases, according to a *Reuters* report, quoting traders.

In Asia, the benchmark 0.5% sulfur gasoil spots in Singapore fell to \$2.85, while Japan ULSD spots were around \$2.92. A *Platts* report analyzing China government figures showed that oil demand in August fell below 9 million barrels/day, a level not seen since October 2010, although total China oil demand was up 7% on a year-over-year basis.

National Development and Reform Commission (NDRC) data show that China's gasoline consumption grew 4.6% year-over-year in August, while diesel demand climbed 1.2% year-over-year.

Still, diesel consumption has grown in China by 5.9% year-to-date, to 87.8 million metric tons, while gasoline demand also has risen this year by 8.1%, to 41.5 million metric tons, according to the report.

But the data could indicate a slowdown in China demand growth, yet another sign of world-wide economic troubles, according to the report.

U.S. ULSD Output, Stocks Dip

One another front, the latest U.S. Energy Information Administration (EIA) weekly distillate survey showed that U.S. refiner ULSD output and stocks dipped slightly (see chart).

U.S. Distillate Fuel Oil (Diesel) Production, Stocks, Imports, Downgrades						
Production (x 1,000 barrels/day)	8/12/2011	8/19/2011	8/26/2011	9/2/2011	9/9/2011	9/16/2011
<=15-ppm sulfur ULSD	4,022	4,064	4,104	3,929	3,949	3,928
>15 to 500-ppm sulfur	241	218	165	216	198	179
>500-ppm sulfur	288	399	438	402	346	365
Stocks (x 1,000 barrels)						
<=15-ppm sulfur ULSD	103,121	104,157	103,601	103,645	106,445	106,015
>15 to 500-ppm	11,480	10,564	10,395	11,229	10,163	10,011
>500-ppm	39,365	40,977	42,064	41,895	41,872	41,580
Imports (x 1,000 barrels/day)						
<=15-ppm sulfur ULSD	63	111	151	116	122	105
>15 to 500-ppm sulfur	0	0	1	0	0	41
>500 to 2,000-ppm	34	50	25	35	32	11
Exports (x 1,000 barrels/day)	745	745	745	745	745	881

Source: U.S. EIA

As for diesel retail price trends, EIA's latest fuel price survey showed that the average U.S. nationwide retail diesel fuel price last week fell almost \$0.03, to \$3.83/gal.

Diesel retail averages were down across all U.S. regions, with the biggest decrease coming in the Midwest, down more than \$0.04/gal.

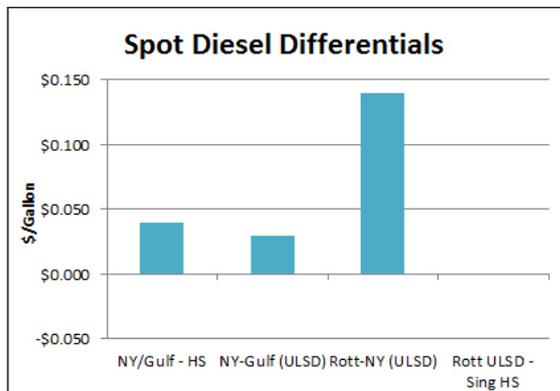
U.S. Gulf Coast and East Coast diesel retail prices both shed about \$0.02/gal on the week. Meanwhile, the Rocky Mountain diesel retail price was down a penny, while the West Coast diesel average fell less than a cent, but remained the most expensive among the major regions at \$3.98 per gallon. The lowest U.S. diesel retail price, on average, was on the U.S. Gulf Coast at \$3.77/gal, according to EIA.

— Jack Peckham

Distillate Watch

Key Distillate Prices (\$/Gal) September 23, 2011		
New York	ULSD	High Sulfur
Spot	2.840	2.780
Houston		
Spot	2.810	2.740
Chicago		
Spot	2.810	--
Los Angeles	EPA ULSD	CARB ULSD
Spot	2.870	2.88
Rotterdam	ULSD	ULSD
	10 ppm	50 ppm
Spot	2.979	n/a
Singapore		High Sulfur
Spot		2.851
Futures	ULSD	High Sulfur
NYMEX	2.841	2.796
ICE		2.877
US Retail	3.83	3.60

Pricing Sources: Dow-Jones, EIA, Hart Publications



Source: EIA Oil Market Report

TRANSPORT NEWS

Maersk Unveils Test of Belco Marine Diesel Exhaust-Scrubbing System

Maersk Line announced September 19 that it's launching a test of a Belco marine diesel emissions-scrubbing system that could enable continued use of relatively cheap high-sulfur, heavy fuel oil (HFO) in "emissions control areas" (ECAs) created by International Maritime Organization Marpol Annex-6 legislation.

The Belco system is designed for installation at Maersk Line and Maersk Tankers vessels. The technology can cut sulfur-oxide (SOx) emissions by more than 97%, according to Belco, a DuPont company.

"We have been investigating SOx scrubber technologies for several years to find appropriate technology for installation on our ships. We are pleased with our partnership with Belco and trust it will bring us one step further in understanding our possibilities to improve environmental performance in a cost-effective manner," said Bo Cerup-Simonsen, head of Maersk Maritime Technology.

Maersk is investing US\$600,000 in the installation and operation of the scrubber, according to the company. "The system will be operational on container ship 'Maersk Taurus' in 2012 and can be in use throughout the voyage if conditions are appropriate," according to Maersk.

"Global sulfur legislation will kick in over the next few years, so the more understanding we have on these systems, the better we are prepared to make smarter investment decisions sooner, when weighing our options against low sulfur fuels," added Maurice Meehan, Maersk Tankers' sustainability manager.



Marine Diesel Emissions Scrubber / Source: Belco

While the scrubber slashes SOx emissions, "a system of this magnitude consumes energy and therefore increases CO₂ [carbon dioxide]," Cerp-Simonsen added. "We need to find the right balance between SOx cuts, CO₂ increases and cost."

Still, according to Belco, "this high-efficiency technology allows a ship to meet the International Maritime Organization's ECA zone (or EU ports) mandates of 0.1% sulfur even when using a lower-cost fuel with sulfur content of 3.5% or more. The Belco system can be installed on new ships and as a retrofit to existing ships."

Maersk Line operates more than 500 vessel and owns some two million containers across 135 countries.

— Jack Peckham

Isuzu, Qingling Ink Truck-Production Deal in China

Japan-based Isuzu announced September 23 that it will build large trucks in China with joint-venture partner, Qingling Motors – with sales expected to start in China and Japan in 2015.

According to a report from Nikkei news service “the Chinese market for large trucks stands at more than 1 million vehicles a year, compared with roughly 30,000 in Japan. Isuzu aims to lower production costs by standardizing some parts and leveraging economies of scale. The firm also hopes to enhance its ability to deal with a strong yen by using cheap Chinese-made parts in trucks manufactured in Japan.”

Besides large-truck production, “plans also call for boosting output of small and midsize trucks in response to growing demand. Through these moves, Isuzu’s annual production capacity in China would roughly double to 200,000 units,” according to the report.

“Isuzu may increase its 20% or so stake in the joint venture by five to 10 percentage points. Overall, it is seen spending 20 billion yen [US\$262 million] to 30 billion yen [US\$394 million] over the next few years to expand in China.”

Volvo: ‘Downspeeding’ Scheme Cuts Diesel Fuel Consumption

Volvo on September 21 announced a new “XE13” powertrain package for its “VN” series diesel tractors that enables the engine to cruise at 1,150 revolutions per minute (rpm) at 65 miles per hour (mph) – about 200 rpm less than the average diesel truck sold today.

The “downspeeding” scheme is enabled by the combination of Volvo’s “I-Shift” automated manual transmission plus a Volvo diesel engine with modified software controls, according to the company.

“Historically, we’ve seen a slow progression toward a lower ‘sweet spot,’ with the 1,300 to 1,500 rpm range as the current industry standard,” said Ed Saxman, Volvo Trucks product manager for powertrain.

“The engine with the XE13 package has a ‘sweet spot’ of 1,050 to 1,500 rpm. Customers gain about a 1.5% fuel efficiency improvement for every 100 rpm of “downspeeding,” so fleets that spec ‘XE13’ can expect up to a 3% improvement when compared with another overdrive transmission in a similar operation.”

The XE13 package is rated for tractor-trucks up to 80,000 pounds (GCWR) and includes the following components:

- Volvo D13 engine with 425 horsepower and 1750 lb-ft of torque;

- Volvo I-Shift overdrive transmission with a 0.78:1 ratio;
- Axle ratios of 2.64 to 2.69; and
- Proprietary software that facilitates seamless communication between Volvo’s integrated powertrain components.

“With the new package, the engine runs in its sweet spot at any given speed, never straying from its sweet spot at any point from zero through top speed,” Saxman added.

“When cruising at speeds below 60 mph, the intelligent software is designed to prompt the ‘I-Shift’ transmission to downshift only when necessary for maximum fuel efficiency.”

Diesel truck fleets that spend more time cruising at highway speeds “will see the greatest improvements,” said Ron Huibers, Volvo Trucks senior vice president for sales and marketing. “Our intelligent, integrated XE13 package delivers improved fuel efficiency without sacrificing drivability during steep mountain inclines or stop-and-go traffic.”

Wärtsilä Claims Unmatched Record in Dual-Fuel Engine Service

Wärtsilä announced September 20 that its dual-fuel engines, capable of running on natural gas, distillates or heavy fuel oil, have now racked-up three million hours of running time in both land- and marine-based applications – a record that “cannot be matched by any other engine manufacturer.”

“The Wärtsilä ‘DF’ engine series is increasingly the power solution choice for utilities and energy companies, as

well as for all segments of the marine industry, worldwide,” according to the company.

“With the engines having passed 3 million hours of reliable and efficient operation, the effectiveness of this technology is proven. Today, the total number of Wärtsilä DF engines delivered to both marine and land-based applications is 470.”

“With oil prices fluctuating and environmental regulations becoming increasingly stringent, the [dual-fuel engine] operator has the freedom to select the most cost-effective and readily available fuel, while also having the ability to utilize natural gas in order to comply with emission limitations,” according to the company.

“A transition to LNG [liquefied natural gas] fuel is one of the most realistic options for significantly reducing the environmental footprint in marine transportation,” said Juhani Hupli, vice president - ship power technology. “Carbon-based greenhouse-gas emissions can be reduced by at least 15%, while sulfur- and nitrogen-oxide emissions are practically entirely eliminated.”

Alaska DOT Files for Injunction in Spat Over Diesel Ferry Engines

The Alaska Superior Court has been asked to issue a preliminary injunction against Robert E. Derecktor, Inc., MTU Friedrichshafen GMBH and MTU Detroit Diesel in an ongoing lawsuit involving allegedly defective marine-diesel engines employed in the Alaska Fast Vehicle Ferry (FVF) system.

“The motion for injunction seeks to protect the state against the prolonged loss of use of the two fast ferries due to engine degradation,” according to the Alaska Department of Transportation (ADOT), which asked the attorney general to file the injunction request on September 19.

“The motion asks the court to order the defendants to take all necessary actions to prevent a disruption in service caused by the engine erosion problems, even before a final court determination is made over legal responsibility for the engine degradation.”

ADOT purchased the “FVF Fairweather” and the “FVF Chenega” from Derecktor Shipyards Connecticut in 2004 and 2005 respectively.

ADOT contends in the lawsuit that the engines were warranted to last 25 years and 100,000 operating hours. But the engines “developed an erosion problem that significantly reduced their operating life. The defendants in the suit have

Wärtsilä began developing dual-fuel gas engines in 1987, the first concept being the gas-diesel (GD) engine with high-pressure gas injection. This was initially developed for the marine offshore market, where it has been applied in numerous floating production units.

The second generation of gas engines was introduced in the early 1990s as spark-ignited (SG) pure gas engines. “The real breakthrough, however, came when the dual-fuel (DF) engine was introduced by Wärtsilä in 1995,” according to the company. “The DF engines utilize low-pressure gas, and combine fuel flexibility with environmental performance and fuel efficiency.”

previously attempted repairs, but ADOT believes that these efforts have not properly remedied the problem,” according to ADOT.

In 2010 ADOT brought suit against Robert E. Derecktor, Inc., MTU Friedrichshafen GMBH and MTU Detroit Diesel alleging that the defendants “provided and installed engines which have not met contract and warranty requirements.”

Through the motion for preliminary injunction ADOT “seeks protection, in advance of the final resolution of the lawsuit, against the prolonged loss of use of these vessels should the current engines be decertified for their intended use in passenger vessels.

“Given the long lead time needed to produce these engines, approximately one year, the state could find itself in a position where the currently installed engines are decertified for continued use well before the final lawsuit resolution. That would negatively impact Alaska residents, visitors, and communities by removing two heavily used and popular vessels from operational service for an undetermined amount of time. Therefore ADOT has determined the motion for injunction to be the appropriate course of action.”

2011
Gasification Technologies Conference

San Francisco, CA
 October 9-12

Register Today

48 ISSUES

DIESEL FUEL NEWS

Yes! Sign me up for Diesel Fuel News!
 I will receive 48 Issues in my e-mail inbox. One year at \$1,295

Name _____

Organization _____

Address _____

City _____ State _____ Zip _____ Country _____

e-mail(Required) _____

Payment Options

Check Enclosed (payable to Hart Energy Publishing)
 110 William St. Suite 2505
 NY, NY. 10038 USA

Please Bill My:

Mastercard Visa AMEX Discover

Card Number _____ Exp. Date _____

Signature _____

Contact Information:

JACK PECKHAM Executive Editor
 jpeckham@hartenergy.com



HARTENERGY

Hart Energy
 1616 S. Voss, Suite 1000 • Houston TX 77057-2627 • USA
 www.hartenergy.com | www.worldfuels.com
 Diesel Fuel News is published weekly by Hart Energy. Subscriptions are \$1,295 per year.
 Copyright 2011. All rights reserved. Reproduction of this newsletter, in whole or in part, without prior written consent of Hart Energy is prohibited. Federal copyright law prohibits unauthorized reproduction by any means and imposes fines up to \$100,000 for violations. Permission to photocopy for internal or personal use is granted by Hart Energy provided that the appropriate fee is paid directly to Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. Phone: 978-750-8400; Fax 978-646-8600; E-mail: info@copyright.com.

Order Today!
 Call: 1-212-608-9078
 Fax: 1-212-608-9357

ARI ROMAN Subscription Manager
 E-mail: aroman@hartenergy.com
 Mail: Hart Energy Publishing, LP
 110 William St. Suite 2505
 New York, NY 10038 USA